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| 10/049,438 | 05/30/2002 | Takahiro Nakajima | 11197/7 | 3695 |

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| EXAMINER | |
|---|---|
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| ART UNIT | PAPER NUMBER |
|---|---|
| 1713 | |

DATE MAILED: 03/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/049,438 | NAKAJIMA ET AL. | |
| | Examiner | Art Unit | |
| | Rip A. Lee | 1713 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-36 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-36 is/are rejected.

7)☒ Claim(s) 5 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 5, 17 and 19 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17, 21, and 22 of copending Application No. 10/169,491 (corresponding US 2003/0045673 enclosed). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 5 is drawn to a polyester polymerization catalyst comprising an aluminum compound and a phosphorus compound wherein said phosphorus compound is at least one selected fro compounds having formula (1): $R^1P(=O)(OR^2)(OR^3)$, wherein $R^1$ is a $C_{1-50}$ hydrocarbon group. Claim 17 is drawn to the polyester produced from the catalyst, and claim 19 relates to the process of making polyester using the catalyst.

Claim 17 of the application relates to a polymerization catalyst comprising at least one kind selected from the group consisting of aluminum and compounds thereof and further

comprising phosphorus compounds Ph–P(=O)($OR^1$)($OR^2$) and Me–P(=O)($OR^1$)($OR^2$). Claim 21is drawn to the polyester produced from the catalyst, and claim 22 relates to the process of making polyester using the catalyst.

The difference between the claims is wording. However, the skilled artisan would have found it obvious that the compounds of claim 17 meet the structural requisites set forth in present claim 5. As such, it would have been obvious to one having ordinary skill in the art that the claims describe essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 4, 15, and 17 of copending Application No. 10/186,634 (corresponding US 2003/0083191 enclosed). Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 1 is drawn to a polyester polymerization catalyst comprising an aluminum compound and a phosphorus compound.

Claim 1 of the copending application relates to polyester polymerization catalyst comprising at least one selected from aluminum and compounds thereof and at least one of phosphorus metal salt compounds.

Claim 4 of the application is drawn to a polymerization catalyst comprising at least one selected from aluminum and compounds thereof and at least one of phosphorus compounds of general forumula (3).

Claim 15 of the application is drawn to a polymerization catalyst comprising at least one selected from aluminum and compounds thereof and at least one selected from phosphorus compounds having at least one P-OH bond.

Claim 17 of the application is drawn to a polymerization catalyst comprising at least one selected from aluminum and compounds thereof and at least one of phosphorus compounds of general forumula (9).

The difference between the claims is wording. One having ordinary skill in the art would have found it obvious that the phosphorus compounds of claims 1, 4, 15, 17 meet the general requirement of "phosphorus compound" in present claim 1. Therefore, it would have been obvious to one having ordinary skill in the art that the claims describe essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

4. Claims 2 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 19 and 23 of copending Application No. 10/186,634. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 2 limits the phosphorus compound to phosphinic acid based compounds, and claim 4 indicates that the phosphorus compound has an aromatic ring structure.

Claim 19 of the application limits the phosphorus compound having a structure of a phosphinic acid compound, and claim 23 states that the phosphorus compound has an aromatic

ring structure. Clearly, the difference between the claims is based on wording. It would have been obvious to one having ordinary skill in the art to realize that the phosphinic acid compounds of claim 2 meet the general requirement of "phosphinic acid based compounds" set forth in present claim 2. Therefore, the skilled artisan would have found it obvious that the claims recite essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Claims 2 and 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 22 and 31 of copending Application No. 10/186,634. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 2 is drawn to a polyester polymerization catalyst comprising an aluminum compound and a phosphorus compound wherein the phosphorus compound is selected from phosphonic acid based compounds. Claim 4 limits the phosphorus compound to those having an aromatic ring structure.

Claim 22 of the application is drawn to a polymerization catalyst comprising at least one selected from aluminum and compounds thereof and at least one selected from phosphorus compounds having at least one P-OH bond, wherein said phosphorus compound is a phosphonic acid derivative. Claim 31 limits the phosphorus compound to those having an aromatic ring structure.

Clearly, the difference between the two claims is semantic. It would have been obvious to one having ordinary skill in the art to recognize that the claims describe essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. Claims 2 and 3 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 42 of copending Application No. 10/186,634. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 2 is drawn to a catalyst comprising an aluminum compound and a phosphorus compound selected from the group consisting of a phosphinic acid based compound, a phosphine oxide based compound, a phosphonous acid based compound, a phosphinous acid based compound, and a phosphine based compound. Claim 3, which depends from the independent claim, limits the phosphorus compound to phosphinic acid based compounds only.

Claim 42 of the application is drawn to a catalyst comprising at least one member selected from aluminum and compounds thereof and at least one member selected from the group consisting of phosphinic acid derivative compounds, phosphine oxide derivative compounds, phosphonous acid derivative compounds, phosphinous acid derivative compounds, and phosphine derivative compounds.

The difference between the claims lies in the wording, and it would have been obvious to one having ordinary skill in the art to recognize that the claims are drawn to essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

7. Claim 7 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 41 of copending Application No. 10/186,634. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 7 is drawn to a catalyst comprising an aluminum compound, a phosphorus compound, and one or more metals and/or metal compounds selected from the group consisting of alkali metals or compounds thereof and alkaline earth metals or compounds thereof.

Claim 41 of the application is drawn to a catalyst comprising at least one selected from aluminum and compounds thereof, at least one of phosphorus metal salt compounds, and one or more metals and/or metal compounds selected from the group consisting of alkali metals or compounds thereof and alkaline earth metals or compounds thereof.

The difference between the claims lies in the wording, but it would have been obvious to one having ordinary skill in the art to realize that the claims are drawn to essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

8. Claim 8 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 46 of copending Application No. 10/186,634. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons.

Present claim 8 relates to a polyester produced from a catalyst comprising an aluminum compound and a phosphorus compound. Claim 46 of the application is drawn to a polyester produced by using a catalyst comprising at least one member selected from aluminum and compounds thereof and at least on phosphorus metal salt compound.

Clearly, the difference between the claims is semantic, and it is maintained that one having ordinary skill in the art would have found it obvious that the claims describe essentially the same invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### *Claim Objections*

9. Claim 5 is objected to because of the following informalities: Please remove the parentheses preceding the word "which" and following the word "structure." Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 19, 20, and 30-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The above claims provide for the use of a catalyst in a process, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim19, 20, and 30-36 are also rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

***Claim Rejections - 35 USC § 102***

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-9, 12-20, 23, 24, 27-31, and 34-36 are rejected under 35 U.S.C. 102(a) as being anticipated by WO 99/28033 to Ridland *et al.*

Ridland *et al.* teaches a catalyst prepared from (*sec*-BuO)$_3$Al, sodium hydroxide, and commercial butyl (acid) phosphate in Example 12. The sodium hydroxide qualifies as an alkaline earth metal compound. Butyl phosphate is a commercial mixture of monobutyl phosphate, BuOP(O)(OH)$_2$, and dibutyl phosphate, (BuO)$_2$P(O)OH (page 3, line 25). The resulting organometallic species is used as a catalyst for polymerization of polyester. Use of aryl phosphates is also contemplated (page 3, line 23), as is use of phosphinate compounds and phosphonate compounds (page 3, line20). The invention also relates to the process of using the catalyst and the polyester produced therefrom. As such, the subject matter of the present claims is taught in the prior art.

14. Claims 1-3, 8 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,733,969 to Thiele.

The prior art of Thiele describes a catalyst comprised of an aluminum silicate zeolite (claim 1). The catalyst is combined with a quantity of phosphorus-oxygen compound such as

phosphonic acid (col. 4, line 8). The invention is also describes a process of using the catalyst for making polyester (see Examples).

15. Claims 1-6, 8-11, 17, 19, 24-26, and 31-33 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,574,174 to Bayer *et al.*

The Bayer *et al.* patent teaches a polymerizaton process in the presence of a catalyst composition comprising a phosphorus compound of formula $R_1R_2R_3P{=}O$ wherein $R_1$, $R_2$,and $R_3$ are $C_{1\text{-}8}$ alkyl, aryl (*i.e.*, aromatic) and $C_{1\text{-}8}$ alkoxy (col. 2, lines 15-23). As can be seen, the prior art compounds meet the structural requisite set forth in the present claims. An example is phenyl phosphonic acid (Example I, col. 3, line 48) and phenyl phosphinic acid (Example XVII, col. 7, line 5). The phosphorus compound is used in conjunction with an aluminum compound of formula $R_1R_2R_3Al$ (col. 2, line 70). According to the inventors, the catalyst may be used in polymerization of unsaturated polyesters (col. 2, line 1).

16. Claims 1, 2, 5, 17, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 3,847,873 to Jackson *et al.*

Jackson *et al.* discloses a process for preparation of aromatic polyesters in the presence of a catalyst comprised of $Al(acac)_3$ and diethylhexadecylphosphonate, $C_{16}H_{33}P(O)(OEt)_2$ (Example 6).

17. Claims 1-3, 5, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anicipated by GB 1,348,146 to Jackson *et al.*

Examples 19 and 20 in Jackson *et al.* reveal processes for preparation of polyesters in the presence of catalysts comprised of $Al(acac)_3$ and $Me_2P(O)OH$ and $MeP(O)(OMe)_2$, respectively.

***Claim Rejections - 35 USC § 103***

18. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

19. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

20. Claims 10, 11, 21, 22, 25, 26, 32, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 99/28033 to Ridland *et al.*

The discussion of the disclosures of the prior art of Ridland *et al.* from paragraph 13 of this office action is incorporated here by reference. The reference does not teach specifically use of phosphinate compounds and phosphonate compounds which contain aromatic ring structures, but in view of the fact that use of aryl ring containing phosphorus compounds such as aryl phosphates is also contemplated (page 3, line 23), it is maintained that one having ordinary skill in the art would have found it obvious to use aryl phosphinates and aryl phosphinates. THe skilled artisan would have found it obvious to arrive at such an embodiment since it flows naturally from the teachings of the patent, and he would have expected such a catalyst to perform equally well in producing polyester.

***Information Disclosure Statement***

21. References not considered in the information disclosure statement either because they were not relevant to the subject matter of the present invention or because they were repeat citations from an earlier filed information disclosure statement.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

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March 11, 2004

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